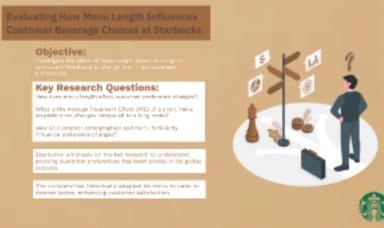


The Impact of Menu Variety on Consumer Decision-Making: A Starbucks Experiment

Exploring Choice Overload and Menu Anxiety in Consumer Behavior



Experimental Design



Key Findings



Why Do More Choices Feel Overwhelming?

Too many options can lead to frustration, decision fatigue, and suboptimal choices



Ever stood in line at Starbucks, frozen by the number of choices?



Menu Design Psychology: Influencing Customer Choices

Goals:

Reduce wait times and enhance service efficiency.

Improve quality and consistency of offerings.

Align with Starbucks' core identity as a coffee company.

Key Factors:

Visual Perception: Strategic placement and layout guide customer attention.

Descriptive Language: Engaging descriptions can enhance perceived value and appeal.

Pricing Transparency: Clear pricing aids in building trust and facilitating decision-making.



Starbucks is Reducing 30% of its Menu by September

Starbucks has announced plans to reduce its menu by 30 percent by September as part of its 'Back to Starbucks' initiative, which will involve discontinuing certain specialty drinks, food items, and complex customization options. This strategic shift, led by CEO Brian Niccol, aims to simplify operations, reduce wait times, and enhance the overall customer experience. The decision follows growing feedback from both customers and baristas that an overcomplicated menu has led to service delays and operational inefficiencies.



Evaluating How Menu Length Influences Customer Beverage Choices at Starbucks

Objective:

Investigate the effect of menu length (short vs. long) on customers' likelihood to change their initial beverage preferences.

Key Research Questions:

How does menu length affect customer preference changes?

What is the Average Treatment Effect (ATE) of a short menu on preference changes compared to a long menu?

How do customer demographics and menu familiarity influence preference changes?

Starbucks' emphasis on market research to understand evolving customer preferences has been pivotal in its global success.

The company has historically adapted its menu to cater to diverse tastes, enhancing customer satisfaction.



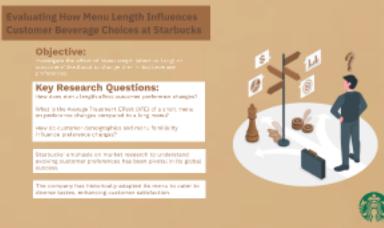
Rationale for Starbucks Experiment

Starbucks----
diverse beverage menu and
extensive customer base;
ideal example for studying the
effects of menu variety on decision-
making.



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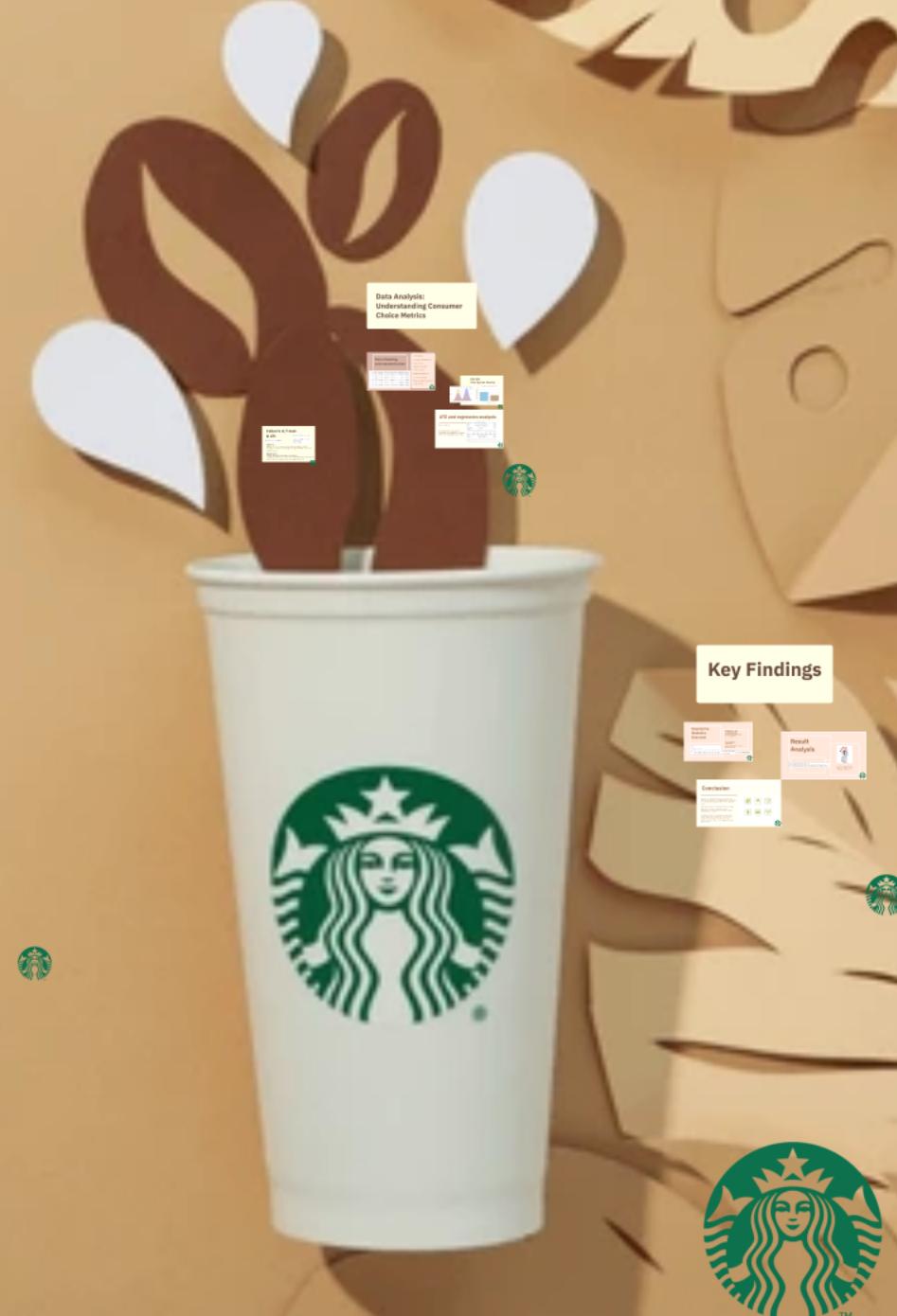
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Research Question



How does the number of beverage options on a Starbucks menu influence consumer decision-making?

**dynamics of choice
overload**

**consumer behavior in
a real-world context**





Null Hypothesis

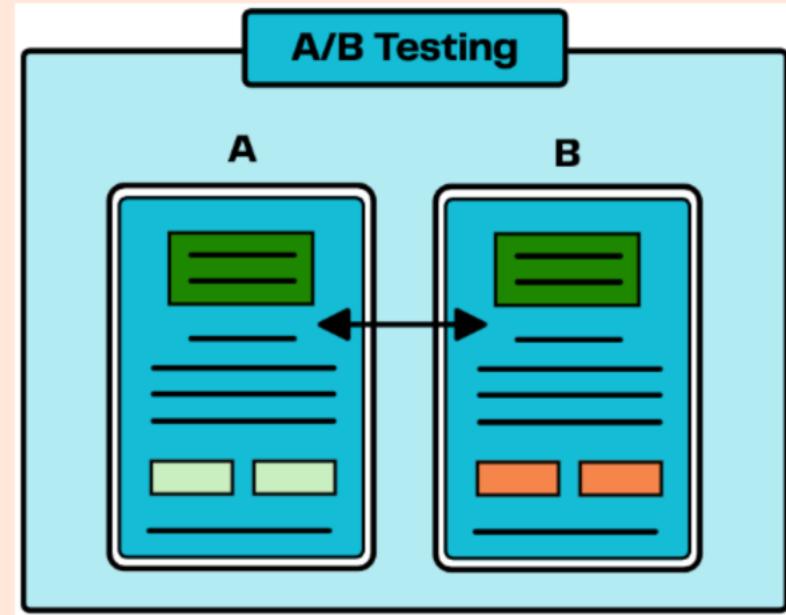
- H_0 : The number of menu options does not significantly impact consumer decisions on what they are going to order.
- H_1 : The number of menu options significantly impacts consumer decisions on what they are going to order.



A/B Testing Method

A limited menu with only 8 beverage options.

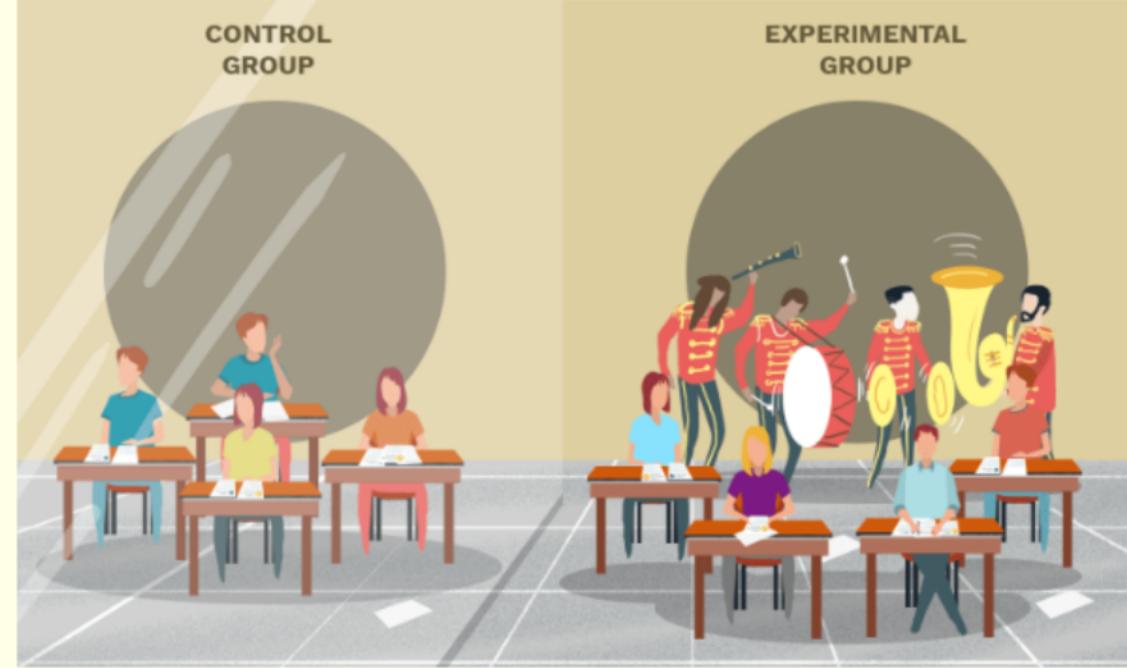
An extensive menu offering a wide selection of 32 beverages.



Treatment Group were provided a simplified menu containing a limited number of beverage options.

Control Group had access to a complete Starbucks menu.

Randomly assigned!



Treatment Group & Control Group



Data Collection Methodology

To simulate a realistic ordering environment, participants completed surveys where they viewed images of beverage options.

choice preferences

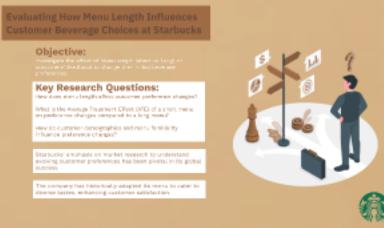
decision times

satisfaction levels



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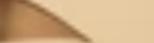
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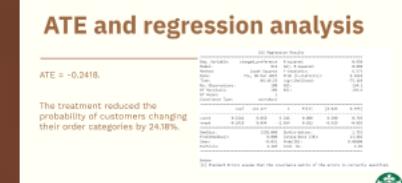
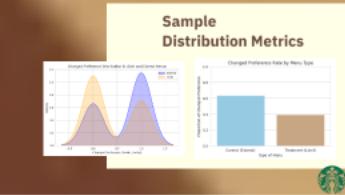
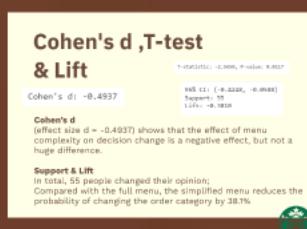
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Data Analysis: Understanding Consumer Choice Metrics



Data Cleaning and standardization

	age	occupation	visit_frequency	menu_familiarity	decision_time	spending	selected_beverage	default_choice
0	18-29	Student	Several times a week	Very familiar	Less than 15 seconds	\$5 - \$10	Matcha Crème Frappuccino®	Coffee-based beverage
1	18-29	Both Employed and Studying	Several times a week	Somewhat familiar	15 seconds - 30 seconds	\$5 - \$10	Chai Latte	Coffee-based beverage
2	18-29	Student	Multiple times a day	Somewhat familiar	More than 2 minutes	\$5 - \$10	Matcha Latte	Tea-based beverage
3	18-29	Student	Occasionally	Somewhat familiar	1 - 2 minutes	\$5 - \$10	Matcha Crème Frappuccino®	Coffee-based beverage
4	30-49	Student	Several times a month	Very familiar	1 - 2 minutes	Less than \$5	Strawberry Açaí Refresher	Refresher beverage
...

Data Merging

Variable Standardization

Missing Value

Category Recoding

Time Mapping

Spending Conversion

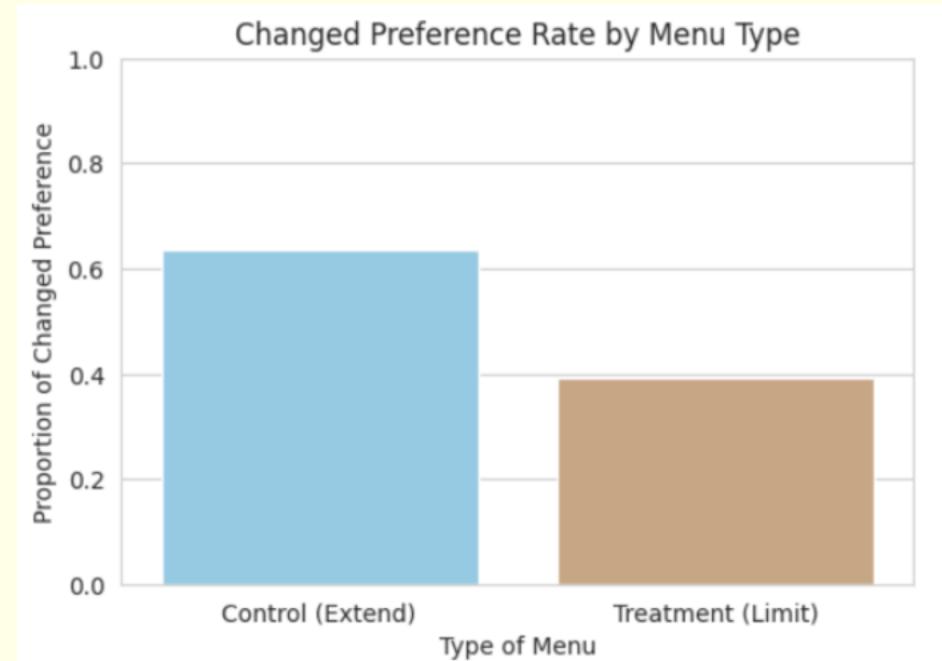
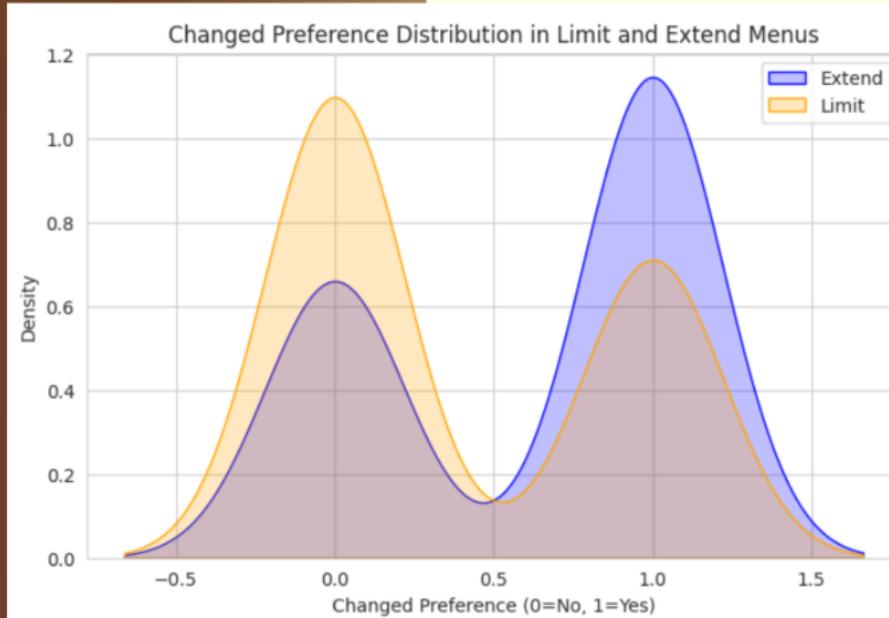
Column Renaming

Binary Variable Processing

Data Filtering



Sample Distribution Metrics



ATE and regression analysis

ATE = -0.2418.

The treatment reduced the probability of customers changing their order categories by 24.18%.

OLS Regression Results						
Dep. Variable:	changed_preference	R-squared:	0.058			
Model:	OLS	Adj. R-squared:	0.050			
Method:	Least Squares	F-statistic:	6.573			
Date:	Thu, 06 Mar 2025	Prob (F-statistic):	0.0118			
Time:	06:16:23	Log-Likelihood:	-75.118			
No. Observations:	108	AIC:	154.2			
Df Residuals:	106	BIC:	159.6			
Df Model:	1					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
const	0.6346	0.068	9.346	0.000	0.500	0.769
treat	-0.2418	0.094	-2.564	0.012	-0.429	-0.055
Omnibus:	1238.048	Durbin-Watson:	1.715			
Prob(Omnibus):	0.000	Jarque-Bera (JB):	13.816			
Skew:	-0.031	Prob(JB):	0.00100			
Kurtosis:	1.249	Cond. No.	2.66			
Notes:						
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.						



Cohen's d ,T-test & Lift

T-statistic: -2.5650, P-value: 0.0117

Cohen's d: -0.4937

95% CI: (-0.4248, -0.0588)
Support: 55
Lift: -0.3810

Cohen's d

(effect size $d = -0.4937$) shows that the effect of menu complexity on decision change is a negative effect, but not a huge difference.

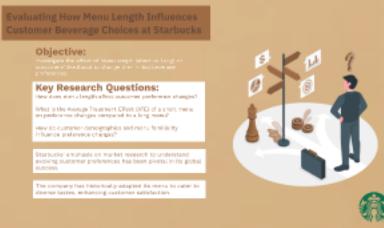
Support & Lift

In total, 55 people changed their opinion;
Compared with the full menu, the simplified menu reduces the probability of changing the order category by 38.1%



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Key Findings



Descriptive Statistics Overview

```
treat  
1 56  
0 52  
Name: count, dtype: int64  
    count      mean       std     min    25%    50%    75%     max  
treat  
0      52.0  41.346154  36.206318  10.0   10.0   22.5   45.0  150.0  
1      56.0  62.723214  47.312493  10.0   22.5   45.0   90.0  150.0
```

Treatment group (simplified menu)
average decision time:
62.72 seconds

Control group (full menu)
average decision time:
41.35 seconds

```
print(cohens_d_decision_time)  
0.5074431339100959
```

T-statistic: 2.6220455839090424
P-value: 0.010026534004859032



Result Analysis

Count of Preferred Extensive Menu: 29

Count of Preferred Extensive Menu; Get Limited Menu; Changed Choice: 8

Count of Preferred Extensive Menu; Get Extensive Menu; Changed Choice: 4



Is the long menu
really "useful"?



Conclusion

Properly increasing the menu may bring more choices, but those who really like long menus will not change their original choices after watching them.

An overly long menu not only leads to a longer selection time and a bad experience for customers, but also those who prefer a long menu will not change.

Therefore, we think it is better to control the length of the menu, which can not only help reduce the difficulty of choosing, but also increase the purchase of the category of drinks that you like.



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